

ABSTRACT

A 1,4-di-substituted diacetylene polymer that is soluble in organic solvent, is composed of a repeating unit represented by the general formula $=CR-C\equiv C-CR' =$ (wherein, R and R' represent identical or different monovalent organic substituents), and has an average degree of polymerization of 4 to 200 and a ratio (Mw/Mn) of weight average molecular weight (Mw) to number average molecular weight corresponding to said average degree of polymerization (Mn) of 1.1 to 5.0, and

a process for producing the 1,4-di-substituted diacetylene polymer by irradiating a solution of the soluble 1,4-di-substituted diacetylene polymer with laser light having a wavelength within the range of 250 to 1,200 nm, and preferably 550 to 900 nm, to cause a photodegradation reaction of said polymer, or

heating a solution of the soluble 1,4-di-substituted diacetylene polymer to a temperature of 100 to 300°C to cause thermal degradation of said polymer; and

1,4-di-substituted diacetylene polymers for which the average degree of polymerization and molecular weight distribution are controlled to within predetermined ranges, a production process that enables that control, useful composite compositions based on the 1,4-di-substituted diacetylene polymers, and constitutions of materials in which said composite compositions are used.